

1

How does a Transportation Project Begin?

Facility Planning

HOW DOES THE FACILITY PLANNING PROCESS WORK?

Facility Planning for transportation improvements is an evaluation process that furnishes design plans which are approximately 35% complete. It is managed in two phases.

Phase I addresses two essential questions:

- What will the improvements be?
- Why are the improvements necessary?

Phase II addresses:

- How will the improvements be performed?
- How long will the design/construction take?
- How much will the improvement cost?

The components of both Phase I and II provide enough information for elected officials to determine whether or not the project is justified to be fully funded for design and construction.

FACILITY PLANNING- PHASE I

Collect data, obtain public input, develop concept plans, evaluate and select preferred alignment/cross section. Present Recommended Alternative to Planning Board and obtain MCDOT Director's and Montgomery County Council's Transportation Infrastructure, Energy and Environment committee (T&E) approval.

Funded

Submission

Not Funded

FACILITY PLANNING- PHASE II

Develop 35% design plans, cost estimate, and project schedule.

Submit to Montgomery County Council for approval to be included in Capital Improvement Program (CIP)

If approved for full funding and is included in the CIP, complete final design and construction!

Phase I

1. MAP Mobility Action Plan
2. Background Data Collection
3. Public Input
4. Travel Demand Forecasting
5. Purpose & Need
6. Conceptual Alignments & Typical Sections
7. Preliminary Impacts
8. Public Meeting #1 to present Alternate Alignments
9. Concept Plans
10. Public Meeting #2 to present chosen Alignment
11. Project Prospectus and Director of DPWT Approval

1. BACKGROUND DATA COLLECTION

The goal of a project study is to determine the existing conditions and proposed future developments expected in the Study Area. The data collected forms the background and basis for the project assumptions, including:

- Project Study Area (project limits and areas immediately adjacent to or directly influenced by the project)
- Planimetric data (topography, location of rivers, streams, wetlands, and buildings, roads and misc. transportation features)
- property boundaries
- Master Plan/zoning information
- Traffic counts (intersection turning volumes; average daily traffic volumes)
- Ridership forecasts; existing and proposed transit service
- Other transportation projects or planning efforts in the Study Area
- Environmental features (wetlands; specimen trees; parks, historic sites; etc.)
- Noise sensitive locations (schools; parks; churches; etc.)
- Flood plain areas
- Accident data (for road projects)
- Existing road geometry (curves, hills, pavement widths)
- Existing traffic controls (traffic signals; stop signs; turning restrictions; weight limitations; etc.)

1

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Phase I

2. PUBLIC INPUT

Public input is an important part of the facility planning process. Usually one or more public briefings are held to inform the public of the project under study and to describe the project's scope or specifics (i.e. build a new facility: road, transit project or sidewalk; widen a road; etc.). Throughout the project study the public is encouraged to provide input to the Project Manager via Public Comment Forms distributed at the Public Briefings or by direct contact with the Project Manager.



3. TRAVEL DEMAND FORECASTING

Beginning with a base of existing traffic, future travel demand takes into account future development, the fixture road network, and annual traffic growth. Average daily traffic volumes, peak period traffic volumes, and turning movements are developed for various years as follows:

- Current Year forms the base line from which to understand existing conditions
- Projected "Open to Traffic" Year- approximately ten years from start of project study, and approximately twenty years from start of project study.

Phase I

4. PURPOSE AND NEED

Once the existing and future conditions are known in the Study Area and future travel demand has been determined, the project is then evaluated to see if it is or will be necessary (NEED). If current or future conditions warrant improvement, then the project is evaluated to determine if the project, as proposed, will serve the current or future needs in the Study Area (PURPOSE). If an improvement is needed and the current project has PURPOSE, then the study progresses. If the project does not meet PURPOSE and NEED, then the project is changed or stopped (if not NEEDED).

5. CONCEPTUAL ALIGNMENT AND TYPICAL SECTIONS

Conceptual horizontal and vertical alignments and typical sections are developed to best satisfy the purpose and need.

E. Alternates Evaluated

Six alternates were developed and evaluated based on the Master Plans, the project's purpose and need, the traffic study, safety, and the environmental assessment.

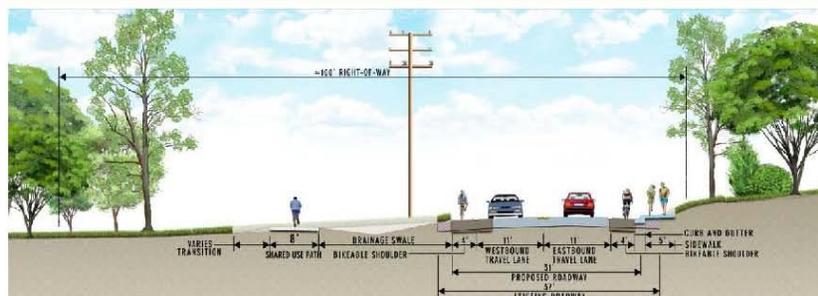
- Alternate 1 – No-Build
- Alternate 2 – Master Plan
- Alternate 3 – Enhanced Master Plan
- Alternate 4A – 8' Shared Use Path North Side and Sidewalk South Side with Bikeable Shoulders (**Recommended Alternate**)
- Alternate 4B – Sidewalk North and South Sides with Bikeable Shoulders
- Alternate 4C – Sidewalk North Side Only with Bikeable Shoulders

All build alternates include drainage improvements and the addition of left turn lanes along Bradley Boulevard at Wilson Lane.

F. Recommended Alternate

The team recommended alternate is Alternate 4A – 8' Shared Use Path North Side and Sidewalk South Side with Bikeable Shoulders is a minimized version of the recommendations from the 1990 *Approved and Adopted Bethesda-Chevy Chase Master Plan* and the 2005 *Countywide Bikeways Functional Master Plan*.

Figure ES-2. Alternate 4A – 8' Shared Use Path North Side and Sidewalk South Side with Bikeable Shoulders Typical Section Looking East



1

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Phase I

The conceptual horizontal and vertical alignments and typical sections are applied to the Study corridor and result in the concept plans. Conceptual designs are created to help determine the project's impacts and to serve as a guide during the Phase II of Transportation Facility Planning and Final Design work if the project proceeds beyond Phase I of Transportation Facility Planning.

7. PRELIMINARY IMPACTS

The preliminary impacts of the project are determined from the concept plans. Impacts investigated include: future traffic operations; environmental, community; noise, historical compatibility; compliance with Americans with Disabilities Act requirements, and conformance to Clean Air Act requirements. Additionally, a preliminary cost estimate is developed.

8. PROJECT PROSPECTUS

When the work and analysis for the project study is completed, a Project Prospectus is produced which details all of the activities listed above. The Project Prospectus documents the findings of the Project Study. When complete, it is distributed to the agencies that participated in the Project Study for final review and concurrence with its findings. The findings in the Project Prospectus will include a recommendation on whether to continue with the development of the project.

Oak Drive/Ridge Road (MD 27)
Sidewalk Improvement Project

*Phase I Facility Planning Study
Draft Project Prospectus*

June 2011

Pedestrians at MD 27 at Oak Drive

John Hamer Park Greenhouse Drive

School children at Oak Drive at Anthon Ridge Pkwy

John C. Baker Middle School

Montgomery County Department of Transportation
Planning

<http://www2.montgomerycountymd.gov/DOI-DTE/Projects/ProjectHome.aspx>

1

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Phase I

9. PUBLIC PARTICIPATION AND DIRECTOR OF MCDOT APPROVAL

The public outreach effort that began at the beginning of Phase I culminates in a final public informational briefing. The community reviews the information on the findings and recommendations and provides comments.



The Director of the Department of Transportation makes a final review of the Project Study and community comment/input. The director has the authority to accept or reject the findings of the Project Study. If the Project Study recommends to proceed with development of the project and the Director concurs, the project will then move to Phase II of Transportation Facility Planning



Phase II- Preliminary Engineering

1. On Going Public Input
2. Preliminary Engineering
3. Horizontal & Vertical Alignments
4. Physical Investigation
5. Soils. Storm Drains. Hydraulic. Structural. & Sediment Control
6. Right of Way
7. Intersection Geometrics
8. Final Concepts
9. Noise
10. Environmental
11. Construction Sequence
12. Quantity Take Off



Develop Detailed Scope, Schedule, & Cost Estimate

1. PRELIMINARY ENGINEERING

Phase II of Transportation Facility Planning begins the preliminary engineering design work for the project. Major tasks include:

2. PHYSICAL INVESTIGATION

Performing PHYSICAL INVESTIGATION on site to develop detailed plans of the existing conditions. This includes detailed planimetric surveys of the project area/corridor.

3. HORIZONTAL AND VERTICAL ALIGNMENTS

Developing the HORIZONTAL (curves) and VERTICAL (grades) ALIGNMENTS. Determine the specific types of SOILS on site, and develop preliminary design for controlling stormwater runoff including STORM DRAINS, determining the HYDRAULIC and STRUCTURAL characteristics of the project's design, and developing a SEDIMENT CONTROL plan for use during the project's construction to control soil erosion and runoff.

Phase II- Preliminary Engineering

4. RIGHT OF WAY

Determine the amount or RIGHT OF WAY or land necessary to construct the project.



5. INTERSECTION GEOMETRICS

Determine the INTERSECTION GEOMETRICS for intersections with other County roads along the length of the project. This would include determining the number of approach and receiving lanes, cross walks, exclusive left or right turn lanes, etc.

6. FINAL CONCEPTS

Develop FINAL CONCEPTS for the design of the project at a more detailed scale than what was produced during Phase I of the Transportation Facility Planning Study.

7. NOISE

Determine if special structures are necessary to mitigate NOISE impacts along the length of the project (walls, berms, etc.).

8. ENVIRONMENTAL

Determine ENVIRONMENTAL impacts and any necessary mitigation measures necessary to comply with wetlands, forest conservation, and/or other regulations.

Phase II- Preliminary Engineering

9. CONSTRUCTION SEQUENCE

Develop a CONSTRUCTION SEQUENCE for phasing the different elements of the construction activities. This would include interim traffic control plan, phasing of removal of existing paving/demolition, phasing of construction activities, etc...



10. QUANTITY TAKEOFF

Construction cost estimates are developed during the QUANTITY TAKEOFF phase. This is where elements of the construction process are itemized such as X tons of asphalt at \$X.xx/ton; X feet of road striping at \$X.xx/foot; or X street trees at \$X.xx/tree, etc.

DEVELOP DETAILED SCOPE, SCHEDULE, AND COST ESTIMATE.



A detailed plan identifying the specific elements of the project's design and specific tasks to be performed during construction will be developed. It will also have an accurate schedule for performing the final design of the project and the length of time to construct the project. Most importantly, a reliable cost estimate will be developed for the project. When the preliminary engineering has reached the appropriate level of completion (generally 35% of final design), including accurate project schedules and cost estimates, then the Transportation Facility Planning Process for the project is complete.

At this stage the project, if recommended to proceed at the end of Phase II, will now become a "stand alone" project. This means that there will now be a specific line item in the Department of Public Works & Transportation's next fiscal year total budget request. A Project Description Form (PDF) for the project is submitted with the rest of the Department of Public Works & Transportation budget request.

See the CIP Design Elements for Roadway Projects.

Getting Funding

PDF (PROJECT DESCRIPTION FORM) SUBMITTED IN CIP (CAPITAL IMPROVEMENTS PROGRAM)

Every fiscal year the Department of Public Works & Transportation (DPWT) submits a capital budget request to cover current approved capital projects (design & construction) and new capital project expenses. After a project has successfully made it through the Transportation Facility Planning Process it is ready to be submitted as a "stand alone" capital improvement project.

In Montgomery County the fiscal year begins on July 1 st. The budget process for the coming fiscal year begins roughly one year in advance, i.e. for FY 02 (7/1/01 through 6/31/02) the process starts in late spring of 2001. The public comment period also begins in late spring with Public Forums held at the Regional Services Centers located throughout the County. Any stand alone project, as part of the DPWT budget request, passes through several layers of evaluation external to DPWT including the Office of Budget and Management, the County Executive, and then the County Council. DPWT submits PDF's for the upcoming fiscal year to the Office of Budget and Management (OMB) in September. The Division of Engineering Services is responsible for assembling many of the PDFs for transportation capital improvements for the September submission. Work on the September PDF submissions, including preliminary OMB review, starts in late spring.

The DOT Budget request is reviewed by the Office of Budget and Management (OMB) as part of the entire Executive Branch's budget requests. OMB then forwards its recommendations for the budget to the County Executive. The County Executive evaluates OMB's recommendations for the CIP (Capital Improvements Program). During this time there is the opportunity for the public to provide comment on specific budget items to the County Executive. The County Executive then submits the coming Fiscal Year's request for the entire Executive Branch (including DPWT) to the County Council for funding on January 15th, as mandated by the County Charter.

County Council has the final approval of the composition and size of the coming Fiscal Year's budget for Montgomery County. The County Council conducts public hearings on the coming year's budget as part of Montgomery County's budget process. If a "stand alone" project submitted by the DPWT is recommended by the County Executive and approved by the County Council as part of the next fiscal year's budget request, it is now funded for final design and construction!

Final Design

When the project is funded in the Capital Improvements Program (CIP), the Division of Engineering Services can then proceed with final design of the project. When final design is complete project plans are 100% complete and ready for construction. The length of time necessary to perform final design varies depending on the size and complexity of the project. Small projects may take one year or longer while larger projects may take several years to complete.

Also included in the Final Design stage is environmental agency review. The County must apply for and obtain permits before construction can begin. The permitting agencies include: Montgomery County Department of Environmental Protection, Maryland Department of Environment, US Environmental Protection Agency, and the US Army Corps of Engineers. These agencies have the authority to request changes in project design to avoid or mitigate environmental impacts or even deny permits based on environmental impacts. Acquiring the permit for a project can sometimes lengthen the time between project's inception to the start of construction.



**US Army Corps
of Engineers**



As the design work is completed and the final alignments and profile of the project are known, all necessary Right of Way is acquired for the project. The pace of Right of Way acquisition can also affect the project's schedule. Generally construction cannot start until all Right of Way has been acquired unless the Division of Engineering Services has been granted authority to condemn land for the project via Advanced Takings if directly authorized by the County Council.

CIP Design Elements – Roadway Projects

1. The purpose of the The Project Development Guidelines 53 steps is to provide guidance to MCDOT staff and consultants involved in developing a project from its initiation of design through concurrence in award of a construction project. Please refer to “The Project Development Guidelines” in the Reference Section of this document.

2. The Context Sensitive Road Design Standards (COMCOR 49.28.01) This new regulation as of February 2009 applies to all projects except as follows:
 1. All capital projects already included in the Adopted CIP FY 09-14, except those projects listed in Facility Planning Transportation, are exempt from these regulations. Projects listed in Facility Planning Transportation which have completed Facility Planning Phase I including review of the project prospectus by the Council Transportation and Environment Committee by the date of adoption of these regulations are also exempt from these regulations, except that they shall comply with the Stormwater Management provisions of these regulations.
 2. Development Projects – All development projects that have received preliminary plan approval by the date of adoption of these regulations are exempt from these regulations.
 3. These Standards together with those existing design standards maintained by the DOT (Standards 100.01 -811.01) are available for use until such time as the existing design standards are reviewed for applicability and either retained or eliminated. DOT will review the existing design standards for applicability within 12 months of the adoptions of these regulations to determine which standards should remain in place and which elements of the existing standards should be incorporated into the new standards. Additionally, details such as paving sections and general notes will be updated. A new Executive Regulation will then be submitted identifying which of the existing standards are to be eliminated.

2. The Context Sensitive Road Design Standards (COMCOR 49.28.01)- SEE CROSS SECTIONS IN THE REFERENCE SECTION OF THIS REPORT.

3. Montgomery County Code Chapter , Streets and Roads- SEE REGULATIONS



3

Public Participation Process

PUBLIC PARTICIPATION PROCESS

MCDOT performs public outreach activities throughout the planning, design and construction of each project to share information, solicit ideas, and respond to issues and concerns. Public outreach activities include open public forums, public hearings, one on one contact, presentations to civic or business groups, newsletter mailings, comment cards, etc.



WHO IS THE PUBLIC?

We consider the public to be clients and to be any person or group not a member of the project study team:

- ✓ property owners directly affected by the proposed project
- ✓ residential community
- ✓ business community
- ✓ transportation system users
- ✓ special interest groups (environmental, transit, bicyclists, etc.)

WHAT DOES THE STUDY TEAM BELIEVE ABOUT PUBLIC PARTICIPATION?

Public participation will be based on these beliefs:

- ✓ everyone who might be hurt or helped by the proposed project is included in the process
- ✓ everyone is entitled to the same information
- ✓ information is provided in ordinary language so that the tradeoffs, costs, and impacts are easy to understand
- ✓ assistance is given to any clients who need help to participate Effectively

3

Public Participation Process

WHAT IS AN OPEN PUBLIC FORUM?

An Open Public Forum is a method for the Study Team to provide all of the members of the public with an opportunity to discuss the proposed project. Public forums can be held several times during the life of a project. Forums are held at a central location in the community from approximately 7:00 PM to 9:00 PM. Information is presented in handouts, walk through displays, videos, artist renderings and computer animations. Discussions can take place with Study Team members in a one on one situation on the display area and also in a group question and answer setting at the beginning or end of the forum.



HOW WILL THE STUDY TEAM USE INFORMATION GATHERED FROM THE PUBLIC?

The Study Team will consider all information submitted by the public in evaluating the purpose and local/regional needs for the proposed transportation facility, opportunities and constraints, project impacts and mitigations, and no build versus build, and various build alternatives.

4

What is the CIP Road Project Process: Cost estimating Methodology?

DTE just recently completed the FY 2013-2018 CIP development process. Staff's first priority is to review, make corrections and update the PDF text. Then we will begin collecting cost information data for each project to complete the C.I.P. Budget Estimate form, OMB's C.I.P. Project Description and Cost Summary, Pedestrian/Bike/ADA Analysis Sheet, and Capital Investment Readiness Evaluation.

Estimate of Unknown Contingency

CIP ROAD PROJECT PROCESS: COST ESTIMATING METHODOLOGY

40% +/-

Order of Magnitude Cost Estimates

- Quick analysis of alternatives where there is little other information;
- Based on best available information and historical linear foot or square foot costs.

35% +/-

Conceptual Cost Estimates

- Basic alignments and general consensus on type of structures, etc. are known;
- Based on conceptual plans on topographic maps, and historical linear foot or square foot costs.

20% +/-

Preliminary Cost Estimates

- Actual field and aerial surveys, and prepared (35%) preliminary plans are plats;
- Based on actual alignments with most features, and the right-of-way plats have computed preliminary areas to be acquired;
- Based on actual preliminary quantities and the most closely related unit prices.

10% +/-

Final Cost Estimates

- Based on the 100% final plans and plats;
- Refined alignment features; permits acquired; utility impacts, property acquisitions completed or in "quicktake"; detour routes established; etc;
- Right-of-way plats been adjusted to take into account these extra items
- Based on 100% final quantities and the most closely related unit prices

The level of contingency needed decreases as design is finalized and the number of unknowns decreases.

Construction

When the plans for the project are completed, the project is ready to be bid out for construction. The Division of Engineering Services will procure a contractor to construct the project. When a contractor has been selected and the County and Contractor have agreed on the terms of the contract, Notice to Proceed is given and ground is broken on the project.

During the construction period the Construction Section supervises and inspects the work of the contractor to ensure the project is being constructed to Montgomery County's standards for design and quality. After completion and final inspection, the project is opened to the public. The "life cycle" of a transportation project is now complete.

The Construction Section of the Division of Transportation Engineering is responsible for advertising and constructing capital improvements to existing County roads.

Contract preparation and the bidding process take approximately 8 months. It takes 90 days for the contract preparation to include the necessary contract documents, the Office of Procurement requires 30 days to advertise and obtain bids by the end of the 30 day period, and 120 days to review bids, obtain bonds, make recommendation to award and issue Notice to Proceed. Staff also provides management and inspection services for the public capital improvement projects. Inspectors ensure that the contractors are conforming to the design and appropriate standards and specifications while minimizing the inconvenience to the community.

